Place, space, and geographical exposure: Foreign subsidiary survival in conflict zones

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Abstract

This study focuses on the role of geography in foreign subsidiary survival in host countries afflicted by political conflict. We argue that survival is a function of exposure to conflicts, and depends on the characteristics of place (the conflict zone) and space (geographic concentration and dispersion of other home-country firms). The roles of place and space are explored using street-level analysis of geographic information systems data for 670 Japanese multinational enterprises (MNE) subsidiaries in 25 conflict-afflicted host countries over 1987-2006. Through dynamic modeling of conflict zones as stretchable and shrinkable places relative to subsidiary locations, we develop a means of characterizing a foreign subsidiary's exposure to multiple threats in its geographic domain. Our results show that greater exposure to geographically defined threats, in both a static and a dynamic sense, reduces the likelihood of MNE survival. The findings indicate, moreover, that both concentration and dispersion with other firms affect survival; however, the effects depend on *where* the firm is spatially located (whether the firm is in a conflict zone) and *with whom* (home-country peers or sister subsidiaries).

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INTRODUCTION

With far-flung operations often located in unstable host countries, multinational enterprises (MNEs) are regularly exposed to geographically defined threats; however, geography has typically been neglected by international business scholars who study the MNE. This neglect is problematic, because changes in the global economy have made the location (L) component of the OLI paradigm "an increasingly important determinant of the scope, pattern, form, and growth of MNE activity" (Dunning, 2009: 26). At the same time, geographers who study aspects of geography such as location, distance, and connectivity have largely ignored the MNE (McCann & Mudambi, 2004, 2005).

Recently, however, scholars from both international business and economic geography have begun to analyze the geography of the MNE. Notably, Beugelsdijk, McCann, and Mudambi (2010) have reorganized the OLI paradigm in an attempt to make geography more central within MNE theory. While "ownership" and "internalization" are merged into an "organization" factor, "location" is decomposed into two separate factors: "place" and "space."

Place refers to location-specific attributes, and *space* emphasizes geographic distance and network characteristics (McCann, 2011). Place and space therefore have the potential to become core geographic concepts, enabling international business scholars to better understand the MNE as an organizational form within the global economy.

In the international business literature the notions of place and space have been used to examine MNE social responsibility at a global level (Devinney, 2011), place-specific firm value extraction (Zaheer & Nachum, 2011), headquarters resource allocation to subsidiaries (Dellestrand & Kappen, 2012), and the paradox of distance with respect to knowledge transfer (Zaheer & Hernandez, 2011). While these papers do examine MNE strategy in a spatial context, their conceptualization of place and space as beneficial or at best neutral for the MNE overlooks the potential downsides of geography. MNEs face a variety of location-specific hazards, particularly when parent firms set up subsidiaries in politically unstable host countries. We therefore argue that there is distinct value in empirically establishing a link between the place-space nexus and MNE responses to geographic threats such as political conflicts. As Piscitello (2011) points out, in addition to exploiting the benefits of differences between locations, the essence of strategy for MNEs also involves avoiding locational hazards.

Our paper builds on Beugelsdijk et al. (2010) by examining how place and space affect MNEs in highly risky locations. We develop sophisticated treatments of geography to address why certain MNEs stay in and other leave conflict zones. Defined as "regions of war, insurgency, or severe lawlessness" (Anderson, Markides, & Kupp, 2010), conflict zones pose irrevocable threats to the operations and employees of MNEs. According to GlobalSecurity, a US-based public policy organization, there were approximately 40 conflict zones worldwide in 2008 (Anderson et al., 2010). Moreover, a record of 388 conflicts ravaged the world in 2011 alone, 38 of which were deemed to be highly violent (HIIK, 2011).

Beugelsdijk et al. (2010: 489) assert that an integrative analysis of "firm organizational issues with the characteristics of the subnational region is essential for understanding the interplay between the MNE and its spatial environment." This holds true especially in the context of conflict zones. For example, the Chechen War in 1995 was confined to a relatively small and peripheral part of Russia, while the Democratic Republic of Congo in 2007 experienced two distinct civil wars that took place in different parts of the country (Gleditsch & Weidmann, 2012). To account for firm-level heterogeneity at the subnational level, we develop street-level measures to capture precisely the subnational variation in conflict zone coverage and subsidiary activity.

Because MNEs may exit from conflict-prone environments (e.g., if they decide that measures to safeguard investments are too expensive), geographic exposure to political conflicts constitutes a significant problem for subsidiary survival abroad. Our paper helps to open up the "black box" of MNE strategy in adverse conditions by focusing explicitly on the relationship between the MNE's exit-vs-stay decision and its geographic location. Our study contributes to the existing literatures in international business and economic geography by offering insights into physical threats - including their geographical antecedents - and subsidiary survival, in conjunction with a novel analysis of geographical factors. While we know much about subsidiary survival, there has been little research on its geographical determinants in turbulent environments. Our paper also adds to extant knowledge on MNEs by developing subnational theory and testing it with a unique, fine-grained geographic information system (GIS) data set that is able to reveal the critical roles played by geography in MNE strategy.

THEORY AND HYPOTHESES

Threat and Exposure

An analysis of whether MNEs can survive in conflict zones should begin with the question of why MNEs might want to stay in such hostile locations. Locating in a conflict zone is likely to cause major disruptions for firms in terms of bombings, disruptions in supply chain activities and network structures, harm to employees, and other political hazards (Henisz, 2000). Political conflicts thus affect the most fundamental goals of a firm, and constitute threats producing "negative situations in which loss is likely and over which one has relatively little control" (Dutton & Jackson, 1987: 80).

It is important to distinguish between a general threat that is faced by all firms in a conflict-ridden country, and a specific threat, which reflects an individual firm's likelihood of encountering violence from a conflict in a particular location. Because conflicts can be geographically delimited (Buhaug & Gates, 2002), we characterize the level

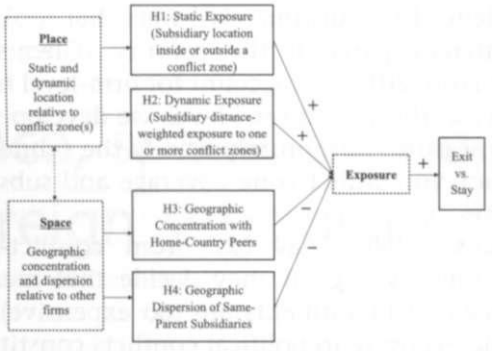

Figure 1 Impact of geography on foreign subsidiary survival in conflict zones.

of specific threat experienced by a given subsidiary in terms of its *exposure,* which geographically captures the extent to which the subsidiary may be in contact with, or subject to, a specific threat (Adger, 2000).

Relevant both at the level of socioeconomic groups such as MNEs and across time and space (Turvey, 2007), the concept of exposure has emerged as a cross-cutting theme in many research traditions. Examples include the human dimensions of global environmental change (Gallopin, 2006), socioeconomic differentials in physical and mental health (Baum, Garofalo, & Yali, 1999), race differences in substance abuse (Wallace & Muroff, 2002), gender differences in work stress (Roxburgh, 1996), and socioeconomic differences in susceptibility to life events (McLeod & Kessler, 1990).

Exposure is conceived of in our paper as a geographical mechanism governing the exit-vs-stay decisions of multinationals located in conflict-prone countries. We argue that increased exposure raises the probability of subsidiary exit (reduces the likelihood of survival). Given the unique form of the MNE, with parent and subsidiary operations that traverse multiple country borders, we argue that geographic exposure is experienced differently by each subsidiary based on its location, and that therefore the subsidiary's exit-vs-stay response will vary across national and subnational locations. Figure 1 illustrates our conceptual framework, explaining how place and space affect a foreign subsidiary's exposure to conflict zones and its exit-vs-stay decision. We explore these arguments below.

Conflict Zones as Subnational Geographic Places

In the international business literature, *place* refers to the inherent attributes of the physical locations that affect MNE strategy and performance (Zaheer & Hernandez, 2011). Places have distinctive geographic characteristics, which can be natural (e.g., climate, minerals, elevation) or man-made (e.g., buildings, language, political systems). In the international business literature, place has typically been treated as synonymous with country, to the neglect of subnational differences (Beugelsdijk et al., 2010; Phelps & Fuller, 2000). We believe this is inappropriate. As Buckley and Ghauri (2004: 83) point out, "the nation state as the possessor of the sense of identity is being replaced by subnations and internal regions." Country-level analysis is especially problematic for our study, because political conflicts are usually concentrated in specific locations inside a country, and therefore "place" in terms of political conflicts is more appropriately examined using a subnational perspective (Buhaug & Gates, 2002).

We view conflict zones as important subnational places that, depending on their geographic characteristics, can affect a foreign subsidiary's exit-vs-stay decision in the host country. Conflict zones pose a specific threat to the foreign subsidiary: the more the subsidiary is exposed, the less likely it is to stay. In effect, political conflict is the "ultimate" hassle facing the firm (Schotter & Beamish, 2013). Our baseline arguments with respect to *place* focus on the characteristics of the conflict zone as experienced by the foreign subsidiary. We argue that a subsidiary's exposure to conflict depends on geographic factors such as the location, size, and number of conflict zones in a host country in a particular year. These geographic factors matter in the same way that an individual's susceptibility to the flu virus depends on his or her location relative to the location and number of infected individuals, and the severity of their illness.

In our theory development, we differentiate between *static exposure* (whether the subsidiary is located inside a conflict zone) and *dynamic exposure* (a compound measure of exposure that takes into account location, distance, zone size, and number of conflict zones). Static exposure captures the actual and immediate threat faced by the subsidiary if it is located inside a conflict zone. Dynamic exposure captures the compound potential threat to the subsidiary posed by its location in a conflict-ridden host country, as determined by a combination of factors, such as size and number of the conflict zones, and the subsidiary's distance from the center of these zones. As static and dynamic exposure increase, we hypothesize that the foreign

subsidiary is more likely to leave (less likely to survive), *ceteris paribus.*

Static exposure

To the extent that geographic proximity to knowledge and markets is a strong predictor of MNE location (Nachum, Zaheer, & Gross, 2008), proximity to political conflict should encourage a foreign MNE to reevaluate its location choice. A case in point is Shell, which first decided to leave Nigeria because of violent conflict in the Niger Delta, despite the rich petroleum reserves that originally attracted its entry (Feil, Fischer, Haidvogl, & Zimmer, 2008).[1]

The counterfactual argument is that outside the boundaries of a conflict zone a firm faces less exposure, and therefore has more willingness to stay and a higher likelihood of survival if it does stay in the host country. Similarly, when a political conflict is confined to the periphery or border areas, the conflict is less likely to generate physical harm to firms located elsewhere in the host country (Berman, 2000): therefore the MNE may not need or want to exit (Li, 2006). For example, the majority of foreign subsidiaries were unaffected by the Algerian civil war (1991-2002), because they were in the southern parts of the country, removed from the conflict zone, which was in the north (Berman, 2000).

Because violence in political conflicts is more selective than indiscriminate, and bounded by the control of belligerents over a specific territory (Kalyvas, 2003), we argue that the exposure - as well as the survival - of a subsidiary will be affected by its location relative to (i.e., inside or outside) a conflict zone in the host country. When the foreign subsidiary is located inside the boundaries of a conflict zone, we argue that the firm faces *static exposure,* and predict that:

> Hypothesis 1: A foreign subsidiary will be more likely to exit (less likely to survive) if it is located inside rather than outside a conflict zone in the host country.

Dynamic exposure

In addition to addressing the question of whether a foreign subsidiary is located inside or outside a conflict zone, there are a variety of "place" characteristics that can affect the subsidiary's total exposure to political conflict, and therefore influence the firm's exit (survival) decision.

A subsidiary's exposure is contingent not only on its location *vis-d-vis* a conflict zone, but also on the firm's distance from the zone and the size of the zone. Berman (2000), for example, argues that conflict zone size is positively linked with persistent and intense combat. Often involving large, organized opposition groups (Buhaug, 2010), a conflict covering a broader geographic area even at a low intensity can be more destabilizing than a confined but more destructive conflict in one location (O'Loughlin & Witmer, 2010). Just as gravity is influenced by size and distance, we expect that a firm's exposure to political conflict will be higher (lower), the larger (smaller) the geographic size of the conflict zone(s) and the closer (further away) the firm is from these zones.

Conflict zones can also expand and contract over time, affecting the firm's exposure to political conflict (Gleditsch & Weidmann, 2012). Because the distance between a subsidiary and a conflict zone will change with the annual expansion and contraction of these zones, place must be construed not only as static (in or out of the conflict zone) but also in terms of dynamic time-space. In measuring the combined effects of exposure, which we call *dynamic exposure,* we therefore need to treat conflict zones as "stretchable, shrinkable spaces" (Abler, Adams, & Gould, 1971: 82). Even in the case of a single conflict zone, dynamic exposure will vary over time, based on the location of the subsidiary, its distance to the conflict zone, and the size of the zone.

Moreover, there may be more than one conflict zone in a host country in a given year. When there are multiple conflict zones in the host country, a focal subsidiary is faced with several different exposures to place-specific threats. In considering the combined impact of these implied threats, we draw on insights from our solar system to model dynamic exposure. According to Coulomb's law,[2] the gravitational forces of attraction and repulsion among the planets are roughly a function of the relative sizes and distances of the planets from one another, which illustrates the loss-of-strength gradient principle of "the further the weaker" (Boulding, 1962: 78). The combined effects of gravity on a focal body (e.g., the earth) that is generated by its surrounding bodies (e.g., other planets, moons, and the sun) is a function of their location, distance, and size, which together determine the attraction/ repulsion of the earth to these other bodies.

Taking a given subsidiary as the focal body, we can visualize multiple conflict zones as planets of

different sizes and at various distances from the subsidiary. Using Coulomb's law, we can therefore predict that the combined gravitational force (i.e., the *dynamic exposure)* faced by the focal subsidiary should depend on the locations, distances, and sizes of the conflict zones relative to the subsidiary, each of which can vary from year to year. Using our gravitational analogy and Coulomb's law, we argue that a subsidiary's dynamic exposure will be magnified if it is near such conflict zones, and diminished if it is far from them. In any given year, the forces of attraction may dominate, and the focal subsidiary stays or survives in its place; in another year the forces of repulsion could dominate, and the subsidiary exits. Because *place* is *dynamic and evolutionary* (Lorenzen & Mudambi, 2013), we propose the following:

> Hypothesis 2: A foreign subsidiary will be more likely to exit (less likely to survive) as its dynamic exposure to political conflict inside the host country increases.

Concentration and Dispersion of Firms in Geographic Space

If *places* are distinctive, nonempty geographic locations - that is, "they have content" (Taylor, 1999: 10) - *spaces* are relational.[3] Whereas place is somewhere, space is everywhere (Taylor, 1999). Space can be conceptualized as the variety of relationships linking two or more places, examples of which include distance, connectivity or shared ties, and spatial dependence. As Agnew and Duncan (1989: 2) put it, "space emphasizes the location of things in relationship to other things, and how things are *distributed."*

In the international business literature, space has been represented primarily as the distance between home and host countries (Dunning, 1988; Piscitello, 2011). Empirically, scholars have found that increasing levels of cultural, institutional, and geographic distance not only lead to lower levels of foreign direct investment (FDI) (Beugelsdijk & Frijns, 2010), but also exert different effects on market-seeking vs efficiency-seeking FDI (Slangen & Beugelsdijk, 2010). Distance can also reduce spillovers (Adams & Jaffe, 1996; Beugelsdijk & Cornet, 2002), even as geographic dispersion increases product-specific efficiencies and organizational learning (Audia, Sorenson, & Hage, 2001). For MNEs, geographically dispersed interfirm networks are particularly influential in spreading knowledge (Mowery, Oxley, & Silverman, 1996), and beneficial for subsidiary reconfiguring of value-chain activities during economic crises (Chung, Lee, Beamish, & Isobe, 2010), but disadvantageous for resource allocation from headquarters to subsidiaries (Dellestrand & Kappen, 2012).

The opposite of distance - variables such as proximity (Zipf, 1949), shared borders (Starr, 2005), and connectivity (Lorenzen & Mudambi, 2013) - has also been shown to be an important influence on MNE behavior. While geographic clusters may develop as a result of historic factors and co-location advantages (Mudambi & Swift, 2012; Zucker, Darby, & Armstrong, 1998), the functionality of clusters may be conditioned by different types of connectivity, such as personal relationships, pipelines, or a mix of both (Lorenzen & Mudambi, 2013), and networks of alliances (Markusen, 1999). Research suggests that firms can reduce the liability of foreignness by expanding to geographically proximate countries (Hymer, 1960) and co-locating with other home-country firms (Zaheer & Mosakowski, 1997). The clustering phenomenon has also been used to show a positive relationship between spatial proximity and knowledge spillovers (Cantwell & Piscitello, 2005) and the impact of proximity with collaborators and competitors on firm performance (Chang & Xu, 2008).

Thus space in the international business literature has been characterized in terms of centrifugal forces (the distance or dispersion of firms or countries from one another) and centripetal forces (the clustering or concentration of firms or countries with one another). In our work, we extend this earlier literature by examining how the centrifugal and centripetal forces of other firms inside the host country can affect a focal subsidiary's exit/survival response to exposure to conflict zones.

We differentiate between two groups of such firms: *home-country peers* (firms from the same home country as the focal firm) and *same-parent subsidiaries* (sister subsidiaries of the focal firm). We argue that centripetal forces (e.g., concentration) are important for home-country peers, whereas centrifugal forces (e.g., dispersion) are important for same-parent (sister) subsidiaries, in terms of their relative impacts on the focal firm's likelihood of survival in a conflict-afflicted host country.

Specifically, we hypothesize that geographic concentration of home-country peers with the focal firm in the host country reduces the focal firm's exposure to political conflict. We hypothesize

also that geographic dispersion of same-parent subsidiaries (i.e., the overall geographic breadth of the MNE's network) inside the host country reduces the focal subsidiary's exposure to conflict zones. Our theory therefore predicts that both geographic concentration and dispersion with respect to home-country firms can help decrease a subsidiary's exposure to conflict zones, and increase its chances for survival.

Geographic concentration of home-country peers

Following McCann and Mudambi (2004), we examine the centripetal effect of *geographic concentration* that stems from home-country peer firms aggregating in a particular location. Theories of agglomeration economies suggest that the potential for growth in a location becomes more salient with geographic proximity and attendant externalities found in specialized workers, suppliers, and infrastructure (Krugman, 1991). By locating in proximity to one another, firms can benefit from self-reinforcing agglomeration economies such as close supplier-customer relationships and the use of common technologies and specialized labor pools. We argue that such concentration makes it less likely that the focal firm will exit from a conflict-afflicted host country.

Not only is a location more likely to attract subsequent firms once agglomeration economies are established (McCann & Mudambi, 2004), but incumbent firms are also less likely to leave, owing to endowment effects. The concept of endowment effects predicts that people tend to value what they already own more than comparable things that they do not own (Kahneman, Knetsch, & Thaler, 1991). In geographical terms, endowment effects suggest that MNEs should attribute a higher value to a location once they have established a subsidiary in that location. We furthermore argue that such attachment to a location increases with the proximity of peers from the same home country, given the shared investment in and use of local amenities (e.g., schools, grocery stores), labor training systems and labor pools, and just-in-time delivery systems that require spatial concentration of manufacturing plants and strict production flow control by suppliers (Head, Ries, & Swenson, 1995). The geographic concentration of home-country peers in a location therefore has the potential to induce and reinforce hysteresis - that is, the reluctance to divest subsidiaries, even under adverse circumstances (Belderbos & Zou, 2009).

Geographical proximity to home-country peers that likewise experience endowment effects should therefore increase a subsidiary's willingness to stay in a location, given the competitive pressure and constant comparison that occur among geographically co-located firms (Porter, 2000). Since the number of firms in a location proxies for the underlying economic efficiency of the location (Sorenson & Audia, 2000), a focal firm should attach a loss to relinquishing its position within a cluster of competitors greater than the benefits it would perceive from finding another location elsewhere. The resulting interdependence of the decisions of co-located peers amounts to herding behavior, which in foreign MNEs is motivated primarily by the need to prevent competitors from gaining advantage in a host country (Flowers, 1976), especially if those competitors can threaten interests back at home (Knickerbocker, 1973). In leaving a location, an MNE therefore not only forsakes its own locational advantages, but also contributes to the strategic position of its competitors. This has been the case in the Philippines, where foreign MNEs that have stayed through the conflicts (e.g., Honda and Toyota) now reap the benefits of profitability, while those that have left (e.g., Ford, Opel, Chevrolet) find it difficult to regain market share.

In addition to increasing the motivation of MNEs to stay, geographic concentration with home-country peers can also increase the capability of MNEs to stay. To the extent that distance increases difficulties in coordination (Ghemawat, 2001; Sorenson & Stuart, 2001), and proximity lowers the cost and risk of contracting for services (Bania, Calkins, & Dalenberg, 1992), the co-location of home-country peers can give rise to locational economies of scale, such as joint hiring of private security and joint lobbying of the host-country government. Even though co-location does not inherently lead to interaction (McCann & Mudambi, 2005), proximity has the potential to facilitate collective action. Moreover, geographic concentration of home-country peers increases their visibility and collective weight, making it more feasible for them to lobby jointly for shelter from the violence (Hillman & Hitt, 1999).

Therefore we argue that:

Hypothesis 3: A foreign subsidiary is less likely to exit (more likely to survive) in response to political conflict in a host country, the greater the geographic concentration of home-country peers with the focal subsidiary.

Geographic dispersion of same-parent subsidiaries

Space, as it pertains to the MNE, also emphasizes how its own subsidiaries are distributed within the host country. Whereas in Hypothesis 3 we argued that centripetal forces (concentration) are important for home-country peers, here we argue that centrifugal forces (dispersion) are important for same-parent (sister) subsidiaries, in terms of their relative impacts on the focal firm's likelihood of survival.

Geographic dispersion of same-parent subsidiaries within the host country should reduce exposure for an MNE, for several reasons. First, if the MNE's subsidiaries are widely dispersed within the host country, having access to sister subsidiaries (siblings) located elsewhere should help to reduce the focal firm's exposure to a conflict zone or zones, since firms with ties outside a particular district, rather than within a local vicinity, are more likely to survive crises (Lazerson & Lorenzoni, 1999).

Subsidiaries located elsewhere in the host country may be able to provide critical support akin to - or indeed better than - that available from the parent firm. Geographic remoteness compromises a parent firm's capacity to alleviate the impact of external threats on its subsidiaries abroad in terms of providing advice and resources (Boeh & Beamish, 2011). In the same vein, subsidiaries in conflict zones face difficulties in relaying sensitive local information back home and making decisions based on parent feedback (Ghemawat, 2001). Thus the flow of communications and resources between a parent firm and its focal subsidiary is likely to be disrupted during political conflict. On the other hand, as Kim, Lu, and Rhee (2012) show, the experience of sister subsidiaries can be a valuable source of survival-enhancing learning about a subsidiary's operating environment, and help in revising its operating practices.

To the extent that greater MNE network dispersion provides operational flexibility (Allen & Pantzalis, 1996; Chung, Lu, & Beamish, 2008), a focal subsidiary may be able to move expatriates and critical resources elsewhere in the MNE's host-country network. Ingram and Baum (1997), for example, show in a domestic context that the operation of geographically dispersed units allows firms to weather idiosyncratic risks associated with particular locations. Dispersed subsidiaries, which are far enough away to be shielded from the violence but closer to the focal subsidiary than their parent firm, can provide assistance such as temporary refuge for conflict zone employees. The focal subsidiary may therefore not have to shut down, but rather needs only to reduce production temporarily, and shift employees elsewhere in the MNE's host-country network until the conflict subsides. We therefore expect that dispersed same-parent subsidiaries can provide critical resources and support during political conflicts abroad, perhaps more easily and quickly than the parent firm, enhancing the likelihood of survival. Formally stated:

> Hypothesis 4: A foreign subsidiary is less likely to exit (more likely to survive) in response to political conflict in a host country, the greater the geographic dispersion of same-parent subsidiaries inside the host country.

METHODOLOGY

Sample

We tested our hypotheses on a sample of Japanese MNEs from several editions of *Kaigai Shinshutsu Kigyou Souran, Kuni-Betsu* (Japanese Overseas Investments, by Country), a Japanese-language directory of FDI information published by Toyo Keizai (TK data set hereafter). Given the context of our study, a Japanese sample was appropriate for several reasons. First, the extensive time and country distribution in the data set offer considerable variance in the exit-vs-stay outcomes of MNEs. In addition, the data set covers activity across Asia, Africa, and the Middle East, which represent almost all of the conflict zones during this period worldwide. Finally, Japan is less involved in international politics than countries such as the United States and China (Calder, 1988), so our sample also provides a platform for studying MNE behavior where the home-country's influence on the outcome is negligible.

To ensure that the exit-vs-stay decision could be attributed to a single parent firm, we selected wholly owned subsidiaries and international joint ventures where there was a local partner or partners, but only one foreign (Japanese) parent. After listwise deletion of missing values, the sample consisted of 5643 observations from 670 foreign subsidiaries of 433 Japanese parent firms in 25 countries and 54 industries operating between 1987 and 2006. Parent firm data drawn from the *Nikkei Economic Electronic Databank* of Nihon Keizai Shimbun, Inc. were matched with parent firm names in the TK data. Industry-level data were

Table 1 Host countries and Japanese subsidiary exits

Number	Country	Number of observations	Distribution of observations (%)	Number of foreign subsidiary exits	Distribution of foreign subsidiary exits (%)
1	Angola	9	0.2	0	0
2	Ecuador	6	0.1	0	0
3	Egypt	13	0.2	1	0.8
4	Ethiopia	28	0.5	2	1.5
5	India	442	7.8	13	9.5
6	Indonesia	1271	22.5	26	19.0
7	Iran	43	0.8	2	1.5
8	Israel	13	0.2	1	0.7
9	Kuwait	2	0	0	0
10	Liberia	18	0.3	0	0
11	Mexico	127	2.3	5	3.7
12	Nepal	7	0.1	0	0
13	Nigeria	26	0.5	1	0.7
14	Pakistan	107	1.9	1	0.7
15	Panama	17	0.3	0	0
16	Paraguay	1	0	0	0
17	Peru	3	0	0	0
18	Philippines	1519	26.9	43	31.4
19	Russia	48	0.9	3	2.2
20	Spain	44	0.8	1	0.7
21	Sri Lanka	38	0.7	2	1.5
22	Thailand	1773	31.4	32	23.4
23	Turkey	75	1.3	3	2.2
24	Uganda	5	0.1	1	0.7
25	Venezuela	8	0.1	0	0
	Total	5643	100	137	100

derived from the *Analyst's Guide* of the Daiwa Institute of Research. Unless otherwise noted, country-level controls were from the World Bank's *World Development Indicators.*

The data on political conflicts, along with GIS latitude and longitude data for each conflict zone, were compiled from the *UCDP-PRIO Armed Conflict Dataset,* which is a collaborative project between the Uppsala Conflict Data Program and the International Peace Research Institute. The data set has been widely used by both researchers and policymakers (Miguel, Satyanath, & Sergenti, 2004). Conflicts in this data set are defined to have a minimum threshold of 25 battle-related deaths (Uppsala, 2011).

A list of the host countries represented in our sample is provided in Table 1. As an illustration of our data set, Figure 2 provides a GIS-based map showing the location of conflict zones and Japanese subsidiaries in West Africa. The zones are represented as circles, and the subsidiaries as either airplanes (they exited) or pins (they stayed).

Because our binary dependent variable of exit contains many more zeros (5506) than ones (137), we followed Sorenson and Stuart (2001) in modeling our data using rare-event logistic regression to ensure that large numbers of repeat observations for each subsidiary did not result in underestimated standard errors.[4] Tomz's (2001) STATA procedure was used to estimate the rare-event logit models. To account for heteroskedasticity and correlated exit patterns within host countries, we estimated Huber-White robust standard errors adjusted for intra-country clustering of firm behavior.

Dependent and Independent Variables

Exit

Following previous studies on subsidiary survival (e.g., Chung et al., 2008), our dependent variable *Exit* is an indicator variable, E_{xt}, that takes a value of 1 if subsidiary x exits at time t, and 0 if it stays (survives). Observations start in 1987, and continue until an exit occurs, or is right-censored in 2006.

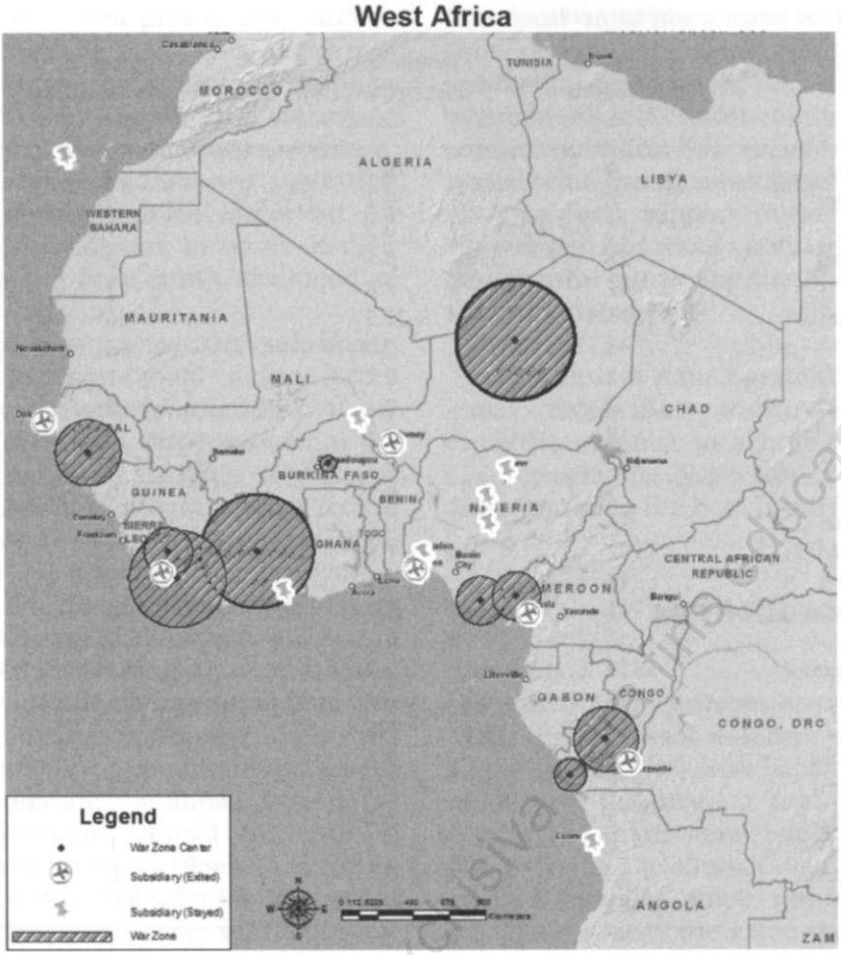

Figure 2 Subsidiary exit-vs-stay decisions in conflict zones: West Africa.

We follow Delios and Makino (2003) in treating delisted subsidiaries from the sample as exits, because the TK data set is almost exhaustive for all cases of Japanese FDI. Our approach has been validated by scholars who compared identified cases of exit in the TK data with reported cases of exit (Delios & Beamish, 2004). In addition, we treat a sell-off of all Japanese ownership as an act of exit by the parent firm. For the period 1987-2006 there were 137 exits during conflicts, 123 of which were physical closures and 14 of which were sell-offs. Next, we describe our four independent variables, which are graphically represented in Figure 3.

Static exposure

Our first independent variable, *Static exposure,* is a dummy variable identifying whether a focal subsidiary is located inside a conflict zone or not. To obtain a precise measure for this subnational geographic place variable (Beugelsdijk et al., 2010),

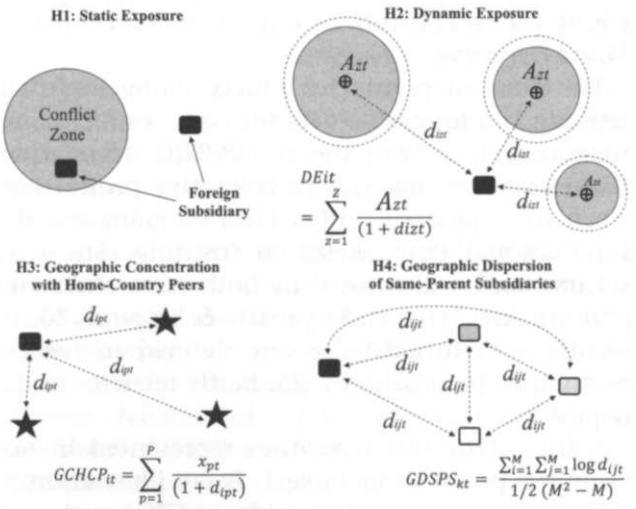

Figure 3 Graphical representations of place and space variables.

we began by searching for Japanese subsidiaries' street addresses in their respective host countries.[5]

Then, using a GIS approach, we geo-coded each subsidiary's address with its latitude and longitude. Conflict zones were similarly geo-coded with center-point coordinates as the smallest circle that surrounds all violent events in a given country and year, with a radius variable to denote their spatial extent (Buhaug & Gates, 2002). Next, we applied the great-circle distance formula to the latitude and longitude of both the subsidiary and the center of its nearest conflict zone to calculate the distance between them. To determine whether a subsidiary was inside or outside a conflict zone, we subtracted the radius from the distance. If the result is negative, then the subsidiary is inside the perimeter of a conflict zone (dummy variable equals 1), and vice versa. For a subsidiary in a country with multiple conflict zones, we subtracted the corresponding radius of each conflict zone from the distance of its center to the subsidiary to determine whether the subsidiary was inside any of the conflict zones - either near or far (i.e., as indicated by a negative number) - in which case this variable was assigned a value of 1 for that year.

Dynamic exposure

To determine a subsidiary's overall geographic exposure to political conflict in a host country in a given year, we need to capture the time and space dimensions of the subsidiary's geographical context. *Dynamic exposure* reflects the combined impact of the focal subsidiary's location relative to the center of each conflict zone, the number of conflict zones, and the size of the zone(s). Following Coulomb's law for determining the gravitational pull/push of multiple bodies,

$$DE_{it} = \sum_{z=1}^{Z} \frac{A_{zt}}{1 + d_{izt}} \qquad (1)$$

where DE_{it} is the dynamic exposure faced by foreign subsidiary *i*, d_{izt} is the distance of subsidiary *i* to conflict zone z (z=1, ...,Z), and A_{zt} is the size of conflict zone z, all measured in year t, we calculate A_{zt}, "the geographic domain of the conflict zone, measured as the circular area centered on the conflict center and covering all significant battle zones" (Buhaug & Gates, 2002: 421), by applying the nr^2 formula for the area of a circle to the radius for each conflict zone. Each area size is then adjusted by its distance d_{izt} from the focal subsidiary, and the result is summed over *N* conflict zones in a host country in a given year. This measure of exposure is dynamic, in that it varies over time as the number and size of conflict zones rise and fall in a host country.[6] By considering the distance from a focal subsidiary to the conflict zone(s), our gravitational formula adjusts for their respective area(s) by showing that their effective sizes decrease as their distance from the subsidiary increases, and vice versa.

Geographic concentration of home-country peers

To test the exposure-reducing benefits of co-locating near home-country peers, we follow Sorenson and Audia (2000) in weighting for each foreign subsidiary *i* the contribution of its home-country peers j (j = 1 , . . . , *N)* according to the inverse of their distance from the focal subsidiary, for each year *t*, using the formula

$$GCHCP_{it} = \sum_{p=1}^{P} \frac{x_{pt}}{1 + d_{ipt}} \qquad (2)$$

where $GCHCP_{it}$ is the geographic concentration of home-country peers (p=1, ...,*P) vis-d-vis* focal subsidiary *i*, and *x* can be any variable being weighted over a distance (for simplicity, we assign a vector of 1s to *x).*[7] We aggregate the weighted contributions across all home-country peers to determine their extent of geographic concentration with a focal subsidiary. If there are no home-country peers, $GCHCP_{it}$ is 0; this variable increases as the number of peers and their proximity to the subsidiary increase.

Geographic dispersion of same-parent subsidiaries

This variable captures the overall size or average dispersion of the MNE's network of affiliates (i.e., sister subsidiaries) within the host country. Following Audia et al. (2001), we calculate the distance between each pair (dyad) of subsidiaries *i* and j, and log and average their distances across all possible dyads for each parent firm *k.*[8] The formula for the geographic dispersion of an MNE's network of M subsidiaries in a host country in a given year t is

$$GDSPS_{kt} = \frac{\sum_{i=1}^{M} \sum_{j=1}^{M} \log d_{ijt}}{1/2(M^2 - M)} \qquad (3)$$

where a double sum is taken over all possible dyads of subsidiaries for a parent *k*, with ***dij*** being the distance between the ith and jth same-parent subsidiaries. Applying the combinations formula,

there are $1/2(M^2-M)$ dyads for any given parent firm. If the MNE has only one subsidiary, $GDSPS_{kt}$ is 0; larger values of this variable indicate greater degrees of dispersion of an MNE's network within the host country.

Control Variables

We control for a variety of other factors that could possibly influence the probability of foreign subsidiary exit (survival), and therefore could confound our results. First, at the subsidiary level, *Subsidiary age* is employed to control for the possible effect on subsidiary survival of the liability of newness, as well as for the ability of older subsidiaries to adapt to host-country conditions. We measure subsidiary age as the number of years a subsidiary has operated since its date of establishment in the host country. We control for *Subsidiary size,* measured by the total number of employees, because studies have shown a positive relationship between the size and survival of foreign subsidiaries (Li, 1995). Because an MNE may seek alternative uses for poorly performing assets (Barney, 1997), we control for *Subsidiary performance* lagged by 1 year to account for the possible effect of financial performance on subsidiary survival. With the advantage of bypassing different national accounting rules that can complicate the comparison of financial performance across countries, this variable - based on managerial reports - has three ordinal levels: 1 for gain (the reference category), 2 for break-even, and 3 for loss; we therefore include *Financial break-even* and *Financial loss.*

At the parent firm level, because strategic considerations such as the need to focus on core activities can affect the divestment of foreign subsidiaries (Benito, 1997), we include a dummy variable *Same industry as parent* to capture whether the subsidiary is in the parent's core industry. Because there is a nonlinear and asymmetrical relationship between an MNE parent's percentage of equity and subsidiary survival (Dhanaraj & Beamish, 2004), we control for *Parent ownership level* as the percentage of the focal subsidiary's equity owned by the Japanese parent. The relationship between parent size and subsidiary survival has been mixed (Li, 1995); larger firms with higher sales can withstand more setbacks abroad, but at the same time give less weight to the survival of individual subsidiaries (Chung & Beamish, 2005). We therefore control for *Parent sales,* annual worldwide sales of the parent firm.

We also include control variables at the industry and country levels. To account for industry effects, we include dummy variables for *Primary, Manufacturing,* and *Wholesale industry* (service is the reference category). Per capita gross domestic product (GDP) and percentage change in GDP were used to control for *Host market size* and *Host market potential.* In considering other risks associated with conflict-prone countries, we control for levels of political, economic, and financial risk with the *Host composite risk* variable.[9] To control for increased exposure to physical atrocities (e.g., kidnapping and torture) and violent political oppression specific to conflict zones, we employed Amnesty International's Political Terror Scale[10] (Vergne, 2012). *Host political terror* ranges from 1 to 5, with the two highest scores capturing conditions where "murders, disappearances, and torture are a common part of life" and "terror has expanded to the whole population."

We also control for several types of ties between the home country (Japan) and each host country, on the grounds that home-host-country ties may affect foreign subsidiary survival. To proxy for the extent to which Japan is an ally of a host country, and may therefore intervene in its political conflict, we measure the two countries' ideological and diplomatic affinity with the *Home-host diplomatic ties* variable. As a proxy for diplomatic ties, we use Gartzke's (2006) Affinity of Nations index,[11] which is based on voting behavior in the United Nations (UN) General Assembly. The index is constructed such that the affinity between any two nations at any point in time falls in the interval from -1 to 1, where -1 means that the two political positions are completely dissimilar (i.e., voting contrary in each instance) and 1 means that they are identical (i.e., voting identically in each instance). Political scientists have found that UN General Assembly votes provide a good approximation for political allegiance and even colonial ties (Brams, 1966; Gartzke, 2006). Similarly, because *Bilateral investment treaties (BITs)* have been found to guard against expropriation (Egger & Pfaffermayr, 2004), we use *Home-Host BIT* to control for the presence of a BIT between Japan and the host country, coded as 1 if there is a BIT and 0 otherwise.[12]

Extant studies have found that MNEs are less likely to locate value-creating activity in countries at greater cultural distance from their home country (Delios & Henisz, 2003). We therefore control for *Home-host cultural distance* using the Kogut and Singh (1988) index, based on Hofstede's (1980) four dimensions of national culture: power distance, individualism, uncertainty avoidance, and masculinity. Because geographic

distance between home and host countries makes it more difficult for the MNE to exert control over threats abroad (Boeh & Beamish, 2011), we account for *Home-host geographic distance* by computing the great-circle distance between the capital cities of the home and host countries.

Lastly, because MNEs tend to learn from and mimic firms from the same industry and home country (Kim, Delios, & Xu, 2010), we control for *Peer industry exits* to measure the prevalence of mimetic isomorphism (Greve, 1995). This variable is measured as the number of home-country subsidiaries, in the same industry as the focal firm, that exited from the host country 1 year earlier (Henisz & Delios, 2004).

RESULTS

Hierarchical regression analysis was used to analyze the effects of our four main-effect variables (static and dynamic exposure, geographic concentration of home-country peers, and geographic dispersion of same-parent subsidiaries) on foreign subsidiary survival in conflict-prone countries. Table 2 presents summary statistics and correlations. Table 3 presents standardized regression coefficients for the rare-event logit models testing the likelihood of MNE exit. All variance inflation factor (VIF) values are below 8, and the mean VIF is below 3 for all models, suggesting that multicollinearity is not a problem in our regressions.

Model 1 of Table 3 includes only the control variables. The coefficients for financial loss, parent ownership, parent sales, host market size, diplomatic relations, geographic distance, and peer industry exits variables are statistically significant at the $p<0.05$ level or higher, with largely expected signs. As a conservative test of statistical significance, we use two-tailed r-tests. Models 2-5 each add an independent variable, while Model 6 represents the full model. Models 2-6 have better overall model fit than Model 1, given their larger log likelihoods, and lower Akaike information criterion (AIC) and Bayesian information criterion (BIC) (Cleves, Gould, & Gutierrez, 2010). Following Newson (2004), we computed the statistical power to be approximately 0.86 (a=0.05; effect size=log ratio of 0.35), which exceeds Cohen's (1988) recommended standard for a minimum power of 0.80.

Our first hypothesis states that foreign subsidiaries are more likely to exit (less likely to survive) if they are located inside a conflict zone. The coefficient on the static exposure variable is positive and significant (0.421, $p<0.001$) in Model 6, providing strong support for Hypothesis 1. Hypothesis 2 predicts that subsidiary exit is also positively related to dynamic exposure; the coefficient is positive and significant (0.082, $p<0.05$), providing support for this hypothesis. Since the coefficients are standardized, we can also see that the present and immediate threat of locating inside a conflict zone (static exposure) is much stronger than the potential compound threat posed by dynamic exposure (0.421 vs 0.082) in terms of their impact on the subsidiary's exit-vs-stay decision, *ceteris paribus*.

Hypothesis 3 argues that the focal subsidiary is less likely to exit (more likely to survive) if concentrated in a space with same-country peers. The coefficient for geographic concentration of same-country peers is negative and significant (-0.511, $p<0.001$), providing support for Hypothesis 3. Our results for Hypothesis 4 are the opposite of what we predicted, however, since the coefficient for geographic dispersion of same-parent subsidiaries is positive and significant (0.181, $p<0.001$). Given standardized coefficients, the impact of geographic concentration with peers appears to have a stronger impact on the focal firm's exit-vs-stay decision than dispersion of the MNE's network (-0.511 vs 0.181).

In Table 4, we present our rare-event logistic results using odds ratios in order to demonstrate the practical significance of our findings. We turn first to our two "place" hypotheses. On the basis of the odds ratio (1.524, $p<0.001$) for static exposure in Model 6, we estimate that the probability of exit is 52% higher if the subsidiary is located inside rather than outside a conflict zone in the host country. Turning to dynamic exposure, the odds ratio (1.085, $p<0.05$) implies that a one standard deviation increase in the level of this variable (based on the number and size of the conflict zones and their distance from the focal firm) produces a 9% increase in the likelihood of foreign subsidiary exit. Both results demonstrate the potentially severe impact on subsidiary survival when countries are faced with political conflicts; the results are nonetheless much stronger inside one "hot spot" compared with near several "hot spots" (52% vs 9%), *ceteris paribus*.

Our two "space" hypotheses also have practical significance, as demonstrated by their odds ratios in Table 4. The odds ratio for geographic concentration with home-country peers (0.600, $p<0.001$) implies that a one standard deviation increase in geographic concentration of same-country peers with the focal firm increases its survival probability by 40%. Lastly, the odds ratio for geographic

Table 3 Rare-event logistic regressions for foreign subsidiary exits from conflict-prone countries (standardized coefficients)

Variable		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Subsidiary age		0.013†	(0.008)	0.024**	(0.008)	0.023**	(0.008)	0.026***	(0.007)	0.024***	(0.007)	0.030***	(0.007)
Subsidiary size		0.030	(0.076)	−0.026	(0.152)	−0.031	(0.151)	−0.049	(0.163)	−0.089	(0.156)	−0.105	(0.167)
Financial breakeven		0.337†	(0.182)	0.051	(0.118)	0.040	(0.117)	0.043	(0.127)	0.039	(0.117)	0.062	(0.127)
Financial loss		0.551***	(0.106)	0.519***	(0.130)	0.522***	(0.127)	0.505***	(0.131)	0.538***	(0.132)	0.519***	(0.140)
Same industry as parent		−0.222	(0.175)	−0.392**	(0.148)	−0.386**	(0.149)	−0.405**	(0.136)	−0.396**	(0.153)	−0.421**	(0.139)
Parent ownership level		−0.015***	(0.003)	−0.021***	(0.004)	−0.022***	(0.003)	−0.022***	(0.004)	−0.022***	(0.004)	−0.021***	(0.004)
Parent sales		0.068***	(0.014)	0.069***	(0.018)	0.069***	(0.020)	0.069***	(0.019)	0.064***	(0.019)	0.062***	(0.017)
Primary industry		0.098	(0.174)	0.225	(0.243)	0.230	(0.242)	0.189	(0.240)	0.249	(0.251)	0.192	(0.235)
Manufacturing industry		−0.293†	(0.156)	−0.028	(0.180)	0.008	(0.181)	−0.164	(0.190)	0.002	(0.181)	−0.209	(0.185)
Wholesale industry		−0.042	(0.248)	0.032	(0.403)	0.104	(0.394)	0.032	(0.412)	0.061	(0.392)	−0.084	(0.415)
Host market size		−0.008**	(0.003)	−0.023***	(0.003)	−0.019***	(0.003)	−0.035***	(0.004)	−0.021***	(0.003)	−0.053***	(0.005)
Host market potential		−0.026	(0.017)	−0.041	(0.028)	−0.051†	(0.029)	−0.053†	(0.029)	−0.050†	(0.029)	−0.040	(0.028)
Host composite risk		0.018	(0.014)	0.043**	(0.015)	0.044**	(0.015)	0.051***	(0.015)	0.043**	(0.016)	0.046**	(0.015)
Host political terror		−0.006	(0.119)	0.110	(0.166)	0.113	(0.153)	0.103	(0.148)	0.080	(0.157)	0.045	(0.158)
Home–host diplomatic ties		−1.657*	(0.674)	−2.594**	(1.005)	−2.871**	(1.039)	−2.781**	(0.100)	−2.932**	(1.079)	−2.437*	(1.063)
Home–host BIT		0.701	(0.452)	0.129	(0.387)	0.191	(0.511)	0.149	(0.481)	0.171	(0.513)	0.115	(0.394)
Home–host cultural distance		0.284	(0.192)	0.244	(0.155)	0.385†	(0.207)	0.372*	(0.190)	0.438*	(0.210)	0.279†	(0.153)
Home–host geographic distance		0.062*	(0.031)	0.105***	(0.028)	0.090*	(0.037)	0.081*	(0.034)	0.089*	(0.038)	0.112**	(0.028)
Peer industry exits		0.012***	(0.003)	0.012***	(0.003)	0.011***	(0.003)	0.017***	(0.002)	0.012***	(0.003)	0.020***	(0.002)
Static exposure	H1			0.499***	(0.130)							0.421***	(0.122)
Dynamic exposure	H2					0.056†	(0.030)					0.082*	(0.042)
Geographic concentration with home-country peers	H3							−0.605***	(0.148)			−0.511***	(0.146)
Geographic dispersion of same-parent peers	H4									0.186***	(0.042)	0.181***	(0.037)
Constant		−3.575*	(1.640)	−5.387***	(1.628)	−5.131***	(1.611)	−5.286***	(1.513)	−4.856**	(1.672)	−5.316***	(1.515)
Number of subsidiary years		6400		5645		5653		5653		5651		5643	
Number of subsidiaries		825		670		671		671		671		670	
AIC		1731.110		1232.014		1241.287		1235.709		1236.998		1228.602	
BIC		1866.391		1371.423		1380.726		1375.148		1376.430		1387.918	
Log likelihood		−845.555		−595.007		−599.644		−596.854		−597.499		−590.301	

Standardized coefficients are reported, with robust standard errors clustered by country in brackets.
†, *, **, *** show significance at the $p<0.10$, $p<0.05$, $p<0.01$, $p<0.001$, respectively (two-tailed).

Table 2 Descriptive statistics and correlations

	Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10
1.	Exit	0.02	0.15										
2.	Subsidiary age	15.97	8.99	0.04									
3.	Subsidiary size	463.47	929.95	−0.01	0.14								
4.	Financial breakeven	0.19	0.39	0.00	−0.02	−0.08							
5.	Financial loss	0.13	0.34	0.03	−0.11	−0.06	−0.18						
6.	Same industry as parent	0.65	0.48	−0.04	0.06	0.07	0.02	−0.04					
7.	Parent ownership level (%)	50.98	29.65	−0.08	−0.07	0.10	0.02	0.00	−0.07				
8.	Parent sales (millions)	0.96	2.54	0.07	0.06	0.03	−0.01	0.01	−0.26	−0.09			
9.	Primary industry	0.22	0.42	0.01	0.14	−0.01	0.03	−0.05	0.07	−0.09	0.05		
10.	Manufacturing industry	0.56	0.50	−0.02	−0.08	0.16	−0.03	0.03	0.17	0.11	−0.10	−0.60	
11.	Wholesale industry	0.13	0.33	0.01	−0.03	−0.16	0.04	0.01	−0.12	−0.02	0.01	−0.20	−0.43
12.	Host market size (billions)	3.77	7.55	0.00	0.00	0.00	0.01	0.01	−0.02	0.08	−0.04	−0.06	0.01
13.	Host market potential (%)	0.21	4.18	0.00	0.01	0.00	0.00	−0.03	−0.01	−0.01	−0.03	−0.02	0.03
14.	Host composite risk	66.35	8.13	0.02	−0.10	−0.03	0.01	0.02	−0.05	0.12	−0.06	−0.11	0.02
15.	Host political terror	3.70	0.52	0.01	0.12	0.03	−0.01	−0.02	0.00	−0.04	0.00	0.03	0.02
16.	Home–host diplomatic ties	0.71	0.09	−0.02	−0.16	−0.06	0.01	0.03	−0.03	0.02	0.04	0.04	−0.10
17.	Home–host BIT	0.03	0.17	0.01	−0.04	−0.04	−0.01	−0.01	−0.05	−0.08	0.04	0.02	−0.04
18.	Home–host cultural distance	0.10	0.60	0.01	−0.13	−0.10	0.08	−0.01	−0.04	0.08	0.03	0.04	−0.14
19.	Home–host geographic distance	5.08	2.07	0.01	0.07	0.02	0.03	−0.01	0.00	−0.07	0.08	0.01	−0.01
20.	Peer industry exits	20.06	20.80	0.02	0.01	−0.02	0.03	0.02	−0.07	0.13	−0.10	−0.07	0.00
21.	Static exposure	0.19	0.39	0.03	−0.13	−0.05	0.04	0.02	−0.02	0.06	−0.01	−0.03	−0.03
22.	Dynamic exposure	0.47	2.70	0.00	−0.04	−0.03	0.04	0.00	0.02	0.02	−0.02	−0.04	−0.04
23.	Geographic concentration with home-country peers	0.43	0.42	−0.01	0.14	−0.08	0.05	−0.03	−0.09	0.04	−0.03	0.13	−0.30
24.	Geographic dispersion of same-parent subsidiaries	0.14	0.73	0.03	−0.02	0.16	−0.05	−0.04	0.01	0.01	0.07	−0.05	0.04

	Variable	11	12	13	14	15	16	17	18	19	20	21	22	23
12.	Host market size (billions)	0.04												
13.	Host market potential (%)	0.03	0.04											
14.	Host composite risk	0.13	0.16	0.53										
15.	Host political terror	−0.08	−0.08	−0.20	−0.41									
16.	Home–host diplomatic ties	0.09	0.04	−0.26	0.07	−0.40								
17.	Home–host BIT	−0.02	0.03	0.03	−0.12	0.11	0.06							
18.	Home–host cultural distance	0.10	−0.07	−0.17	0.01	−0.15	0.34	0.18						
19.	Home–host geographic distance	−0.03	0.05	−0.17	−0.37	0.10	−0.06	0.21	−0.30					
20.	Peer industry exits	0.07	0.15	0.20	0.45	−0.20	0.08	−0.15	−0.09	−0.26				
21.	Static exposure	0.07	−0.10	−0.13	−0.03	0.05	0.06	0.11	0.44	−0.15	−0.12			
22.	Dynamic exposure	0.06	−0.01	−0.05	−0.14	0.01	−0.03	−0.01	0.02	0.19	−0.07	0.21		
23.	Geographic concentration with home-country peers	0.16	0.13	0.16	0.37	−0.16	0.12	−0.17	−0.03	−0.30	0.50	−0.14	−0.06	
24.	Geographic dispersion of same-parent subsidiaries	0.02	−0.01	0.00	0.02	0.06	−0.05	0.01	−0.07	0.02	−0.05	−0.02	−0.01	−0.10

Correlations are based on the format used in regressions; correlations greater than or equal to |0.03| are significant at $p<0.05$ (two-tailed). All distances used are in thousands of kilometers and account for the curvature of the earth (i.e., great-circle distances).

Table 4 Rare-event logistic regressions for foreign subsidiary exits from conflict-prone countries (odds ratio estimates)

Variable		Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
Subsidiary age		1.013†	(0.008)	1.024**	(0.008)	1.023**	(0.008)	1.027***	(0.008)	1.024***	(0.007)	1.028***	(0.007)
Subsidiary size		1.030	(0.078)	0.974	(0.149)	0.970	(0.147)	0.953	(0.155)	0.915	(0.142)	0.900	(0.151)
Financial breakeven		1.400†	(0.255)	1.053	(0.124)	1.041	(0.122)	1.044	(0.134)	1.039	(0.122)	1.064	(0.136)
Financial loss		1.735***	(0.183)	1.681***	(0.218)	1.686***	(0.214)	1.657***	(0.216)	1.713***	(0.226)	1.680***	(0.236)
Same industry as parent		0.801	(0.140)	0.675**	(0.100)	0.680**	(0.101)	0.667**	(0.091)	0.673**	(0.103)	0.656**	(0.091)
Parent ownership level		0.986***	(0.003)	0.979***	(0.004)	0.978***	(0.004)	0.978***	(0.004)	0.978***	(0.004)	0.979***	(0.004)
Parent sales		1.070***	(0.015)	1.071***	(0.020)	1.072***	(0.021)	1.072***	(0.020)	1.066***	(0.021)	1.064***	(0.018)
Primary industry		1.103	(0.192)	1.252	(0.305)	1.258	(0.305)	1.209	(0.290)	1.283	(0.322)	1.211	(0.284)
Manufacturing industry		0.732†	(0.116)	0.972	(0.175)	1.008	(0.182)	0.849	(0.161)	1.002	(0.181)	0.811	(0.150)
Wholesale industry		0.959	(0.238)	1.033	(0.417)	1.109	(0.437)	1.032	(0.425)	1.063	(0.417)	0.920	(0.381)
Host market size		0.992**	(0.003)	0.977***	(0.003)	0.981***	(0.003)	0.966***	(0.004)	0.979***	(0.003)	0.948***	(0.005)
Host market potential		0.974	(0.017)	0.959	(0.027)	0.951†	(0.027)	0.947†	(0.027)	0.952†	(0.028)	0.960	(0.027)
Host composite risk		1.108	(0.014)	1.044**	(0.015)	1.045**	(0.016)	1.052***	(0.016)	1.043**	(0.017)	1.048**	(0.016)
Host political terror		0.994	(0.118)	1.117	(0.186)	1.120	(0.172)	1.109	(0.164)	1.083	(0.170)	1.046	(0.165)
Home–host diplomatic ties		0.191*	(0.129)	0.075**	(0.075)	0.057**	(0.059)	0.062**	(0.068)	0.053**	(0.058)	0.078*	(0.093)
Home–host BIT		2.016	(0.911)	1.137	(0.441)	1.211	(0.620)	1.161	(0.558)	1.186	(0.609)	1.112	(0.442)
Home–host cultural distance		1.329	(0.256)	1.276	(0.198)	1.470†	(0.304)	1.451*	(0.276)	1.550*	(0.326)	1.322†	(0.202)
Home–host geographic distance		1.064*	(0.033)	1.111***	(0.031)	1.094*	(0.041)	0.085*	(0.037)	1.093*	(0.041)	1.118**	(0.032)
Peer industry exits		1.012***	(0.003)	1.012***	(0.003)	1.011***	(0.003)	1.017***	(0.002)	1.012***	(0.003)	1.020***	(0.002)
Static exposure	H1			1.647***	(0.225)							1.524***	(0.186)
Dynamic exposure	H2					1.058†	(0.032)					1.085*	(0.045)
Geographic concentration with home-country peers	H3							0.546***	(0.081)			0.600***	(0.087)
Geographic dispersion of same-parent subsidiaries	H4									1.204***	(0.051)	1.199***	(0.044)
Constant		0.028*	(0.046)	0.005***	(0.007)	0.006***	(0.010)	0.005***	(0.008)	0.008**	(0.013)	0.005***	(0.007)
Number of subsidiary years		6400		5645		5653		5653		5651		5643	
Number of subsidiaries		825		670		671		671		671		670	
AIC		1731.110		1232.014		1241.287		1235.709		1236.998		1228.602	
BIC		1866.391		1371.423		1380.726		1375.148		1376.430		1387.918	
Log likelihood		−845.555		−595.007		−599.644		−596.854		−597.499		−590.301	

Odds ratios are reported, with robust standard errors clustered by country in brackets.
†, *, **, *** show significance at the $p<0.10$, $p < 0.05$, $p<0.01$, $p<0.001$, respectively (two-tailed).

dispersion of same-parent subsidiaries (1.199, $p<0.001$) implies that a one standard deviation increase in geographic dispersion of the MNE's network inside the host country increases the likelihood of the focal subsidiary's exit (reduces its chances of survival) by 20%. In terms of practical significance, concentrating with home-country peers therefore has twice the impact (but opposite in direction) as dispersion of the MNE's host-country network (40% vs 20%), *ceteris paribus.*

Robustness Tests

To check the robustness of our results, we conducted additional tests. First, we explored alternate measures of the "space" variables. Because managers are defined by their shared industry mental models as well as their shared national culture (Pouder & St John, 1996), we created a geographic concentration with home-country peers variable using only firms in the same industry as the focal firm. All independent variables retained their signs and remained significant at the $p< 0.001$ level, with only the dynamic exposure variable now marginally significant ($p<0.10$).

To accommodate alternate assumptions for geographic dispersion of the MNE's host-country network, we reconstructed this variable by adding the dyadic distances between a focal subsidiary and each of its sister subsidiaries in the host country. To take account of differences in host-country size, we created two more measures of relative dispersion of same-parent subsidiaries by dividing our original geographic dispersion variable by the host country's circumference and area, respectively. All three alternate measures of dispersion had the same sign and significance level as our original variable, and left the results for the other independent variables intact.

We also employed alternate measures for our control variables. As a substitute for the political terror variable, we created a battle deaths density variable by dividing the number of battle-related deaths over all concomitant conflicts[13] in a host country by its population for a given year. In addition, because subsidiaries may not be divested because of poor performance unless subject to a lengthy period of observation, we constructed subsidiary performance variables lagged by 2, 3, and 5 years, respectively. All substantive results remained unchanged.

Next, we tested the sensitivity of our results to assumptions concerning home-country involvement, exit specifics, conflict landscape, and MNE activity. To account for Japan's possible intervention in regional conflicts, additional models were run for a subsample of subsidiaries in the Asia-Pacific region. The dynamic exposure variable lost its significance, which may be explained by the reduction in variance of this variable. Using the Philippines as an example, owing to the extensive coverage of the conflict zones, almost all the sampled subsidiaries were similarly exposed.

In addition, because the majority of the foreign subsidiary exits in our sample were closures (90%) rather than sell-offs of Japanese capital (10%), we re-ran our models, treating only closures as exits. To see that geographic landscape matters for subsidiary survival (Berman, 2000), we also conducted analyses using rural and urban subsamples. We similarly looked at whether survival likelihoods differed for market-seeking and efficiency-seeking FDI (Slangen & Beugelsdijk, 2010). All results in these alternate models remained substantively the same.

We then considered characteristics of the conflicts. The distribution of conflicts in our sample was 3.9% interstate, 90.6% intrastate, and 5.5% both inter- and intrastate. We re-ran our models using only subsidiaries that encountered intrastate conflicts; the results were not substantively affected. To determine whether the cause of the conflict affects subsidiary survival, we included a control variable for whether the conflict was a territorial or government dispute; again, our results were as expected.

Lastly, given the fact that 88.7% of the subsidiaries in our sample were accounted for by four countries (India, Indonesia, the Philippines, and Thailand), we examined the robustness of our findings by repeating all regression analyses using data only from these countries. This subsample analysis yielded matching significance levels for all the independent variables except the geographic concentration of home-country peers variable, which retained marginal significance ($p<0.10$). To allay concerns regarding causality, we also re-ran our models using the variables lagged by 1 year. All results remained basically the same.

Post-Hoc Analysis

To determine why the geographic dispersion of same-parent subsidiaries variable had an unexpected sign (0.181, $p<0.001$ in Model 6 of Table 5), we conducted a *post-hoc* analysis running Model 6 on subsamples of subsidiaries located inside and outside conflict zone(s), respectively, as shown in Table 5.

Table 5 Results by foreign subsidiary location inside and outside conflict zone(s)

Variable	Inside conflict zone		Outside conflict zone	
Subsidiary age	0.033*	(0.014)	0.025**	(0.009)
Subsidiary size	0.308	(0.243)	−0.139	(0.208)
Financial breakeven	−0.942**	(0.343)	0.394†	(0.225)
Financial loss	0.192	(0.552)	0.729**	(0.268)
Same industry as parent	−0.709*	(0.361)	−0.306†	(0.175)
Parent ownership	−0.026*	(0.011)	−0.020***	(0.005)
Parent sales	0.032	(0.025)	0.081***	(0.012)
Primary industry	−0.734†	(0.393)	0.394	(0.258)
Manufacturing industry	−0.349	(0.597)	−0.112	(0.194)
Wholesale industry	−0.643	(0.505)	0.204	(0.361)
Host market size	−0.073***	(0.004)	−0.024	(0.070)
Host market potential	0.005	(0.045)	−0.051	(0.051)
Host composite risk	0.042	(0.049)	0.026†	(0.014)
Host political terror	−0.012	(0.462)	−0.019	(0.241)
Home–host diplomacy	−4.703*	(1.876)	−1.311	(1.426)
Home–host BIT	0.414	(0.702)	0.323	(0.597)
Home–host cultural distance	0.201	(0.245)	0.266	(0.177)
Home–host geographic distance	0.244*	(0.098)	0.096†	(0.058)
Peer exits	0.056***	(0.017)	0.023***	(0.006)
Distance-adjusted conflict area(s)	0.156*	(0.062)	0.562	(0.558)
Geographic concentration with home-country peers	1.454*	(0.632)	−0.705**	(0.239)
Geographic dispersion of same-parent peers	−3.819*	(1.694)	0.218***	(0.047)
Constant	−3.499	(5.699)	−4.913**	(1.604)
Number of subsidiary years	1084		4559	
Number of subsidiaries	69		601	
AIC	297.218		915.741	
BIC	377.032		1018.538	
Log likelihood	−132.609		−441.870	

Standardized coefficients are reported, with robust standard errors clustered by country in brackets.
†, *, **, *** show significance at the $p<0.10$, $p<0.05$, $p<0.01$, $p<0.001$, respectively (two-tailed).

Out of the 670 Japanese subsidiaries in our sample, 69 - almost 10% - were located inside a conflict zone. For these 69 subsidiaries located inside a "hot spot," the sign on the dynamic exposure variable is positive and significant (0.156, $p<0.001$), suggesting that higher dynamic exposure encourages subsidiary exit, supporting Hypothesis 2. Geographic concentration with host-country peers, however, changes sign: such spatial positioning now encourages exit (1.454, $p<0.05$), which is opposite to what we had predicted in Hypothesis 3. Geographic dispersion with same-parent subsidiaries, on the other hand, now exhibits the sign that we had expected for Hypothesis 4: that is, greater dispersion of the MNE network in the host country increases the likelihood of survival (-3.819, $p<0.001$). For the 601 subsidiaries not located inside a conflict zone (90% of our sample), the results are similar to those for the full sample, with the exception that the dynamic exposure variable loses statistical significance.

We show the practical significance of these results in Table 6, a two-by-two matrix of the focal subsidiary's conflict zone location and its exit-vs-stay decision. Of the 69 subsidiaries located inside a conflict zone, 36 subsidiaries (48%) chose to exit the host country, while 39 (52%) chose to stay. Thus almost half the subsidiaries located inside a conflict zone left the host country. For the 608 subsidiaries located outside a conflict zone, 101 subsidiaries (17%) chose to exit, while 507 (83%) chose to stay. Thus the ratio of exiting to surviving subsidiaries located inside a conflict zone (48%) is almost three times as high as the ratio for those outside a conflict zone (17%), demonstrating the practical significance of Hypothesis 1 - that foreign subsidiary location relative to a conflict zone matters for subsidiary survival.

Table 6 also provides interesting information about our main-effect variables. First, mean/average dynamic exposure is much larger for the "inside-zone" subsample than for the "outside-zone" subsample

Table 6 Two-by-two matrix of conflict zone location and subsidiary survival

		Exit (non-survival)	Non-exit (survival)	Total
Inside a conflict zone	Number of foreign subsidiaries	36 (48%)	39 (52%)	75 (100%)
	Mean dynamic exposure	0.90	0.87	
	Mean concentration with home-country peers	0.36	0.16	
	Mean dispersion of same-parent subsidiaries	0.01	0.06	
Outside a conflict zone	Number of foreign subsidiaries	101 (17%)	507 (83%)	608 (100%)
	Mean dynamic exposure	0.21	0.25	
	Mean concentration with home-country peers	0.42	0.69	
	Mean dispersion of same-parent subsidiaries	0.40	0.08	
Total	Number of foreign subsidiaries	137	546	683

(roughly 0.9 vs 0.2); however, mean exposure varies little for the exit-vs-stay choice (0.90 vs 0.87 inside zone; 0.21 vs 0.25 outside zone). Therefore, while average dynamic exposure is much higher for subsidiaries inside a conflict zone, the variable has little independent impact on the focal subsidiary's exit-vs-stay decision. From this we can conclude that the clear and present danger from locating inside a "hot spot" is sufficient to determine the subsidiary's exit-vs-stay choice.

In terms of geographic concentration with home-country peers, when the focal subsidiary is inside a conflict zone, the mean concentration level for subsidiaries that stay is 0.16, and for subsidiaries that exit is 0.36. This implies that concentrating with home-country peers inside a conflict zone increases the likelihood of exit, since the mean concentration level for exiting subsidiaries is more than double that for those who stay. When the focal subsidiary is outside a conflict zone, however, the results are reversed: mean concentration with home-country peers is 0.42 for exiting subsidiaries, two-thirds the mean for surviving subsidiaries (0.69). This suggests that concentrating with home-country peers outside a conflict zone does benefit survival. Our results therefore depend on whether the focal firm is inside or outside a conflict zone: concentrating with home-country peers encourages exit for an inside-zone subsidiary; concentrating with peers encourages survival for an outside-zone subsidiary.

Table 6 also demonstrates that, when a focal subsidiary is located inside a conflict zone, average geographic dispersion with same-parent subsidiaries is 0.06 for surviving subsidiaries, compared with 0.01 for exiting subsidiaries. This shows the benefits of a dispersed MNE network for survival of subsidiaries located inside a conflict zone: mean dispersion is six times higher for those that survive. For the outside-zone sample the results are reversed: the mean geographic dispersion of the MNE network is 0.40 for exiting subsidiaries, five times higher than for surviving subsidiaries (0.08). Our results therefore depend on whether the focal firm is inside or outside a conflict zone: more dispersed MNE networks encourage survival for an inside-zone subsidiary, but encourage exit for an outside-zone subsidiary.

In order to isolate the effect of being in a conflict zone on subsidiary survival - in addition to conducting *post-hoc* analyses - it is important to construct an appropriate counterfactual by asking the question: *What would have happened to foreign subsidiaries located inside a conflict zone if they had not been located inside a zone (or vice versa)?* [14] Because we cannot observe this counterfactual - firms in reality were either located inside or outside a conflict zone - we use a method called propensity score matching,[15] which generates a hypothetical counterfactual by re-establishing the conditions of a natural experiment with non-experimental data (Heckman, Ichimura, & Todd, 1997; Rosenbaum & Rubin, 1983). Propensity score matching uses a probit equation to define a matched control group, which enables us to overcome the problem of self-selection.[16] The matching estimators from the nearest neighbor matching, kernel, and radius methods generate the impact of being in a conflict zone, or the average treatment effect (ATT) on the treated, defined as the difference between the real and counterfactual outcomes. We estimate the ATT of being located in a conflict zone on foreign subsidiary survival to lie between 1.1 and 2.0, which is statistically significant at the 5% level, a result considered pronounced at the firm level (Chang, Chung, & Moon, 2013). We conclude that location inside a conflict zone significantly increases the probability of foreign subsidiary exit, even after removing self-selection bias.

DISCUSSION AND CONCLUSIONS

In this study, we highlight the subnational geographical determinants of foreign subsidiary survival in conflict-prone settings. By examining MNE geography in both its absolute and relative contexts, we establish Beugelsdijk et al.'s (2010) schema of place and space as dimensions that inform MNE strategy in difficult environments. By considering place and space alongside their constituent parts of proximity and distance, expansion and shrinkage, and concentration and dispersion, we show that evaluating geographic exposure to environmental factors is a primary means by which MNEs contextualize strategic decisions.

Because operating in a conflict zone increases a foreign subsidiary's exposure and reduces its chances for survival, we argue that location is as much a subnational decision as it is a country-level decision for the MNE (Cantwell & Mudambi, 2011; Coombs, Mudambi, & Deeds, 2006). Our study points to one of the rarely emphasized downside implications of location: in politically violent countries, it is less advantageous to be an insider than an outsider *vis-à-vis* a conflict zone (Cantwell, 2009; Cantwell & Mudambi, 2011; Eden & Molot, 2002). Our findings with respect to exposure also extend Zaheer and Nachum's (2011) argument that locations do not offer the same benefits to all MNEs, by showing that locations do not pose the same threats to all MNEs.

In addition to static exposure, we introduce to the literature the new concept of dynamic exposure, which we argue varies positively with the number and size of the conflict zones and negatively with the firm's distance from them. This paper is also the first, to our knowledge, to use Coulomb's law to theorize about and empirically measure the impact on a firm of being exposed to multiple threats. Our modeling of multiple conflict zones captures time-space dynamics that reveal the impact of expanding and shrinking spheres of external threat on firm survival. We show that, in contrast to cultural and institutional distances, which vary slowly over time, geographic distance at the subnational level can quickly rise or fall, with implications for MNE strategy. Moreover, this novel construct illustrates that just as geographic distance suppresses knowledge flows (Audretsch, 1998), greater distance from a conflict zone suppresses subsidiary exposure to threats from that zone. Our approach may prove useful to other researchers in creating more sophisticated cultural and institutional distance measures for the MNE that involve multiple host countries.

Our analysis shows that relative to place, which is passive, space can be defined in terms of social interactions. We conceive of conflicts as socially constructed spaces, and the MNE as a dual organizational form. By orienting peer firms and their interrelationships in spatial conflicts (Beugelsdijk, 2007), and showing that subsidiaries in hostile contexts can leverage proximity to home-country peers to enhance survival prospects, we extend the literature on the competitiveness and innovation-enhancing effects of agglomeration economies (Krugman, 1991). In doing so, we model external threats as both a bottom-up and a top-down phenomenon (Beugelsdijk, 2007), where the interactions between same-country peers jointly determine the exposure and survival odds of each other in the face of exogenous threats. Whereas place denotes the site where top-down violence occurs, space can be construed as the outcome of bottom-up processes to shield geographically against the violence.

However, as our subgroup analysis reveals, the positive influence of concentrating with home-country peers on the focal firm's survival (i.e., Hypothesis 3) is geographically bounded. We find that, if the focal firm is *inside* a conflict zone, concentrating with peers actually *reduces* the probability of subsidiary survival; *outside* a conflict zone, survival probability is *increased* by such concentration. We reasoned in our theoretical development of Hypothesis 3 that geographic concentration generates self-reinforcing agglomeration economies that encourage survival. We also argued that incumbent firms are less likely to leave owing to endowment effects - that is, the greater loss the MNE would face by exiting and leaving the market to its competitors. Moreover, we viewed concentration as generating locational economies of scale, which would encourage staying. Apparently, all three arguments are important only for focal subsidiaries located outside a conflict zone; once inside, the clear and present danger of political conflict overwhelms the positive advantages of concentrating with same-country peers.[17]

We also find that geographic dispersion of the MNE's network in the host country has different effects on foreign subsidiary survival (i.e., Hypothesis 4), depending on location. If the focal subsidiary is *inside* a conflict zone, greater dispersion of same-parent subsidiaries *increases* the probability of staying; location *outside* a conflict zone *decreases* survival. We argued that dispersion of the MNE's host-country network meant that sister

subsidiaries could provide the focal firm with access to resources, knowledge, and critical support, possibly more readily and quickly than could the parent firm. Sister subsidiaries could also provide a temporary refuge, so that a focal subsidiary might avoid total closure by reducing production and shifting its employees elsewhere in the MNE's in-country network. We therefore expected that a geographically dispersed MNE network would facilitate subsidiary survival.

However, Model 6 in Table 5 showed that the sign on geographic dispersion of same-parent subsidiaries was positive and significant (0.181, $p < 0.001$), implying that, in general, greater dispersion hampered subsidiary survival. In attempting to disentangle this counterintuitive result, our *post-hoc* empirical work revealed that "place" mattered: *inside-zone* subsidiaries were more likely to *stay* whereas *outside-zone* subsidiaries were more likely to *leave,* if the MNE network were dispersed.

A possible explanation for this result comes from Chung et al.'s (2008) study of the 1997 Asian economic crisis. They showed that MNE networks, because of their operational flexibility, had a positive impact on foreign subsidiary survival that was stronger during periods of economic crisis. The authors concluded that "a subsidiary network tends to provide more benefits to subsidiaries in economic crisis environments than to those in economically stable environments" (2008: 289). Examples of operational and strategic flexibility during economic crises included the ability to reconfigure operations and shift factors, production and sales from crisis-ridden markets to more lucrative locations. Moreover, the authors found that the greater the ratio of subsidiaries outside a country facing an economic crisis to those inside the country, the more likely were the subsidiaries in the crisis country to be profitable and survive. The explanation was that, when local markets collapsed, the strategic and operational flexibility provided by a widely dispersed network of subsidiaries protected the subsidiaries in the crisis location.

Chung et al.'s (2008) country-level argument can be applied at the subnational level to explain the effects of geographic dispersion of the MNE's network when the focal subsidiary is located inside or outside a conflict zone. The strategic and operational flexibility provided by sister subsidiaries dispersed throughout the host country provides "breathing room" and support to the focal subsidiary in a conflict zone. Rather than exit, the focal subsidiary inside a conflict zone may be able to avoid downside risks by shifting value-chain activities within the MNE network, circumventing the exit decision by escalating its commitment to a high-stake location, and exercising other options provided by a dispersed MNE network (Belderbos & Zou, 2009). When the focal subsidiary is located outside a conflict zone and the MNE's host-country network is geographically dispersed, however, the high cost of coordinating a far-flung network during a political conflict could easily overwhelm the benefits to be derived from operational flexibility. Although the danger inside a conflict zone does not threaten its immediate survival, the focal subsidiary may still face dynamic exposure and the long-term challenge of maximizing upside gains in a conflict-afflicted country. Given these findings, we suggest that place transforms space.

In sum, whereas geographic concentration with home-country peers (neighbors) helps outside-zone subsidiaries to survive, a more dispersed MNE network (far-away siblings) helps inside-zone subsidiaries[18] to survive. Pouder and St John (1996) argue that firms inside and outside innovation clusters differ in their susceptibility to pressures for isomorphism, and their ability to react to industry-wide jolts. We provide empirical evidence that although subsidiaries inside and outside conflict zones differ in their exposure to threats, their survival prospects are contingent on the extent of concentration with home-country peers and dispersion with same-parent subsidiaries. Therefore place - location *vis-d-vis* sources of external threat - may be taken as a given, but space can be leveraged to reduce exposure. Essentially, these notions of space suggest that, rather than being exogenously imposed, geography should be seen as endogenous as subsidiaries continuously redefine their place in the host country through their spatial interdependencies with peers.

Our study makes several contributions to the literature on MNEs in geographic space. First, we develop and test a series of arguments that acknowledge the fundamental nature of the MNE as an organization for which many decisions are inherently locational (McCann & Mudambi, 2004). We demonstrate at the subnational level that geographic concepts such as place and space are central to MNE outcomes, with effects independent of the cultural and institutional distances often studied in the literature. In line with Buckley and Ghauri's (2004) conviction that the management of space by MNEs should be at the forefront of international business research, we develop an actor-centered

approach to determine the geographic sources of subsidiary survival in difficult contexts (Beugelsdijk, 2007).

Second, we take a first step in modeling subsidiary responses to geographically defined threats at the street level by measuring their geographic proximity in latitude and longitude coordinates using GIS data. Firm-level studies on the role of firms in space are scarce (Beugelsdijk, 2007), and the majority of these studies are unable to disentangle agglomeration effects and localized inter-organizational linkages (Knoben, 2009). While previous studies have established the impact of external threats on MNE activity at the country level, Beugelsdijk (2007: 182) noted that "blurring macro-level evidence with micro-level arguments about firm strategy may lead to an ecological fallacy, in which global phenomena or data aggregates that are actual representations of lower-level phenomena cannot be generalized to those lower levels." Our novel treatment of external threats at the conflict zone level presents an effective means of gauging strategic choice as a function of MNE positioning in place and space (Beugelsdijk et al., 2010).

Finally, our work contributes to the literatures on political risk and macro-level crises. Even as scholars recognize that exposure to political risk is idiosyncratic across firms, projects, and even product lines (cf. Wells & Gleason, 1995), much of the extant research is at the country level. Rather than attribute firm decisions to macro phenomena, we challenge the space-neutrality of the political risk concept by parceling out the specific threats faced by the MNE, and quantifying the exposure of subsidiaries in geographic terms. We theorized and showed that, beyond a certain threshold, geographic distance from the locus of violence reduces the impact of political conflict on MNE decisions, even when controlling for conflict intensity in terms of battle fatalities. For MNEs in conflict-prone countries, the good news from our analyses is that there are geographical boundaries to political risk (Berman, 2000), a phenomenon that has long been construed as ubiquitous within national confines. Given the similar role of dispersion in MNE exit during economic crises (cf. Chung et al., 2008, 2010), this work highlights parallels to crisis management in MNEs. Our findings shed light on the strategic consequences of MNE location, which have been overlooked in research on political and other macro-level crises.

Our study also has some limitations that can open doors to future research. First, we followed Buhaug and Gates (2002) in conceptualizing conflict zones as circular areas. In reality, conflict zones assume various shapes, and we expect that, in the future, researchers will have better GIS data and methods for taking account of the varying geographic shapes of conflict zones. Despite this limitation, our empirical work breaks new ground by using fine-grained GIS data applied to both firms and contextual events. Another limitation of our paper is that a host country's borders determined our selection of conflict zones; we did not take account of conflicts in neighboring countries. Since "geographic distance can actually be larger within a country than between countries, depending on the exact location of firms" (Beugelsdijk, 2011: 200), in future work we hope to analyze the role of country borders in geographically delimiting conflict zones. A third limitation is the sample restriction to Japanese MNEs. While this was necessary, given the paucity of fine-grained subsidiary data for MNEs from countries other than Japan, it is possible that other data sets (e.g., Swedish or US MNEs) might have sufficient data to enable replication of some of our results. Comparing US and Japanese MNE responses in conflict zones, for instance, would be an interesting way to test the impact of Hofstede's uncertainty and power distance cultural characteristics on foreign subsidiary behavior in politically violent locations.

Because MNEs may learn over time to shield their operations from exposure in a certain locale, future research could also examine the geographic sources of firm resilience as opposed to firm exposure. In addition, while conflicts may be interpreted by inexperienced firms as overwhelming events, MNEs with prior experience in conflict zones may perceive such threats as mere fluctuations in political risk (Delios & Henisz, 2003). There may also, therefore, be value in adopting learning perspectives in the study of exposure to geographically bounded threats.

In conclusion, the geographic domain of the MNE is fundamental not only to its performance, but also to its survival. We have shown in this paper that in countries with one or even multiple conflict zones, subsidiary survival depends largely on geography - the characteristics both of the place (the conflict) and of the space (distance) between the subsidiary and its peers. Our findings indicate that, in certain situations, far-away relatives (parents and sister subsidiaries) may actually be less helpful than good neighbors (home-country peers) in the face of pressing hardships (cf. Beugelsdijk & Cornet, 2002). By studying MNE

exposure to spatially defined threats, we hope to encourage more work on the geographic determinants of firm survival to external threats including but not limited to political conflicts.

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NOTES

[1] Shell later chose to exit only partially, evacuating non-essential personnel and cutting back on oil production and exports.

[2] Coulomb's law states that "the magnitude of the electrostatics force of interaction between two point charges is directly proportional to the scalar multiplication of the magnitudes of charges and inversely proportional to the square of the distances between them" (http://en.wikipedia.org/wiki/Coulomb's Law and http://regentsprep.org/Regents/physics/phys03/acoulomb/default.htm).

[3] The distinction between place and space can be drawn too finely. Taylor (1999: 12), for example, argues that "the same location can be both place and space depending on whose perspective is involved": that is, there can be spatial relationships (distance, proximity, ties) within a place such as a city or country.

[4] King and Zeng (2001) have shown that conventional logistic regression underestimates the probability of rare events (approximately < 5% of the data), producing biased coefficients. Please also note that STATA's RElogit command does not report goodness-of-fit statistics.

[5] To our knowledge, with the exception of Boeh and Beamish (2012), no prior international business research has been carried out at this level of analysis. We first searched for foreign subsidiary street addresses on various Internet sites using information on parent name, subsidiary phone number, industry, founding year, and host country. We also searched old news articles for the addresses of the subsidiaries that had already exited. We then identified the latitude and longitude of the subsidiary's address using the website http://itouchmap.com/latlong.html.

[6] In the case of a single conflict zone, Eq. (1) collapses to $A_{zt}/(1 + d_{zt})$. Our measure of dynamic exposure therefore incorporates situations where the focal subsidiary faces exposure to a single conflict zone (z=1), as well as to multiple conflict zones (z>1).

[7] Note the similarity with Eq. (1), where ***A*** is the "weight" (the area of the conflict zone).

[8] The log form accounts for the fact that transportation costs, in terms of both time and money, do not increase linearly over geographic space (Sorenson & Audia, 2000).

[9] The Composite Political Risk Rating from International Political Risk Services includes 12 weighted variables: see http://www.prsgroup.com/ICRG_Methodology.aspx/.

[10] The Political Terror Scale is available at http://www.politicalterrorscale.org.

"The Affinity of Nations Index is available at http://dss.ucsd.edu/~egartzke/htmlpages/data.html.

[12] BIT data are available at http://www.unctad.org/Templates/Page.asp?intltemlD=2344&lang=1/.

[13] In the sample, 73% of the cases involved more than one conflict in a host country in a given year. If there was only one conflict in a given year for the host country, this step was omitted.

[14] We thank the editors for bringing this point to our attention.

[15] This methodology has been widely used in international economics to evaluate, for example, the effects of exporting and acquisitions on firm performance and returns to scale (Arnold & Javorcik, 2009), and of outward FDI on the decision to invest in tangible assets and R&D at home (Egger & Pfaffermayr, 2004).

[16] A simple comparison between conflict zone and non-conflict zone subsidiaries cannot determine the precise effects of zone location, because the characteristics of the subsidiaries inside conflict zones would have differed from those outside conflict zones before the former were "placed" inside.

[17] We control for the exit of same-country, same-industry peers in the prior year, so that geographic concentration with same-country peers encouraging exit captures other motivations besides peer firm exit.

[18] We also theorized about dispersion as a parent-level phenomenon, but our robustness checks found almost identical results for the effects of dispersion on the focal subsidiary (j3=0.18 instead of 0.14; p< 0.001 for both).

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